SANTA CRUZ BIOTECHNOLOGY, INC.

GPD1L siRNA (m): sc-145684

BACKGROUND

Voltage-gated sodium channels drive the initial depolarization phase of the cardiac action potential and, therefore, critically determine conduction of excitation through the heart. As a member of the NAD-dependent glycerol-3-phosphate dehydrogenase family, glycerol-3 phosphate dehydrogenase-1 like (GPD1L) is a 351 amino acid protein that catalyzes the formation of glycerone phosphate and NADH from sn-glycerol 3-phosphate and NAD^+. GPD1L is thought to affect trafficking of the cardiac sodium current to the cell surface. With highest expression in the heart, mutations in the gene encoding GPD1L contribute to a small percentage of Brugada syndrome type 2 (BRS2) cases, an autosomal dominant cardiac disease characterized by a right bundle branch block and ST elevation, resulting in ventricular fibrillation. GPD1L gene mutations are also thought to contribute to sudden infant death syndrome (SIDS).

REFERENCES

1. Cerrone, M., et al. 2001. Long QT syndrome and Brugada syndrome: 2 aspects of the same disease? Ital. Heart J. 2: 253-257.
2. Grant, A.O. 2001. Molecular biology of sodium channels and their role in cardiac arrhythmias. Am. J. Med. 110: 296-305.
3. Papadatos, G.A., et al. 2002. Slowed conduction and ventricular tachycardia after targeted disruption of the cardiac sodium channel gene Scn5a. Proc. Natl. Acad. Sci. USA 99: 6210-6215.
4. Clancy, C.E., et al. 2002. Na^+ channel mutation that causes both Brugada and long-QT syndrome phenotypes: a simulation study of mechanism. Circulation 105: 1208-1213.
5. Van Norstrand, D.W., et al. 2007. Molecular and functional characterization of novel glycerol-3-phosphate dehydrogenase 1 like gene (GPD1L) mutations in sudden infant death syndrome. Circulation 116: 2253-2259.
6. London, B., et al. 2007. Mutation in glycerol-3-phosphate dehydrogenase 1 like gene (GPD1L) decreases cardiac Na^+ current and causes inherited arrhythmias. Circulation 116: 2260-2268.
7. Makiyama, T., et al. 2008. Mutation analysis of the glycerol-3 phosphate dehydrogenase-1 like (GPD1L) gene in Japanese patients with Brugada syndrome. Circ. J. 72: 1705-1706.

CHROMOSOMAL LOCATION

Genetic locus: Gpd1l (mouse) mapping to 9 F3.

PRODUCT

GPD1L siRNA (m) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see GPD1L shRNA Plasmid (m): sc-145684-SH and GPD1L shRNA (m) Lentiviral Particles: sc-145684-V as alternate gene silencing products.

For independent verification of GPD1L (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-145684A, sc-145684B and sc-145684C.

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

GPD1L siRNA (m) is recommended for the inhibition of GPD1L expression in mouse cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 µM in 66 µl. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

GENE EXPRESSION MONITORING

GPD1L (AT14E2): sc-517404 is recommended as a control antibody for monitoring of GPD1L gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor GPD1L gene expression knockdown using RT-PCR Primer: GPD1L (m)-PR: sc-145684-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.